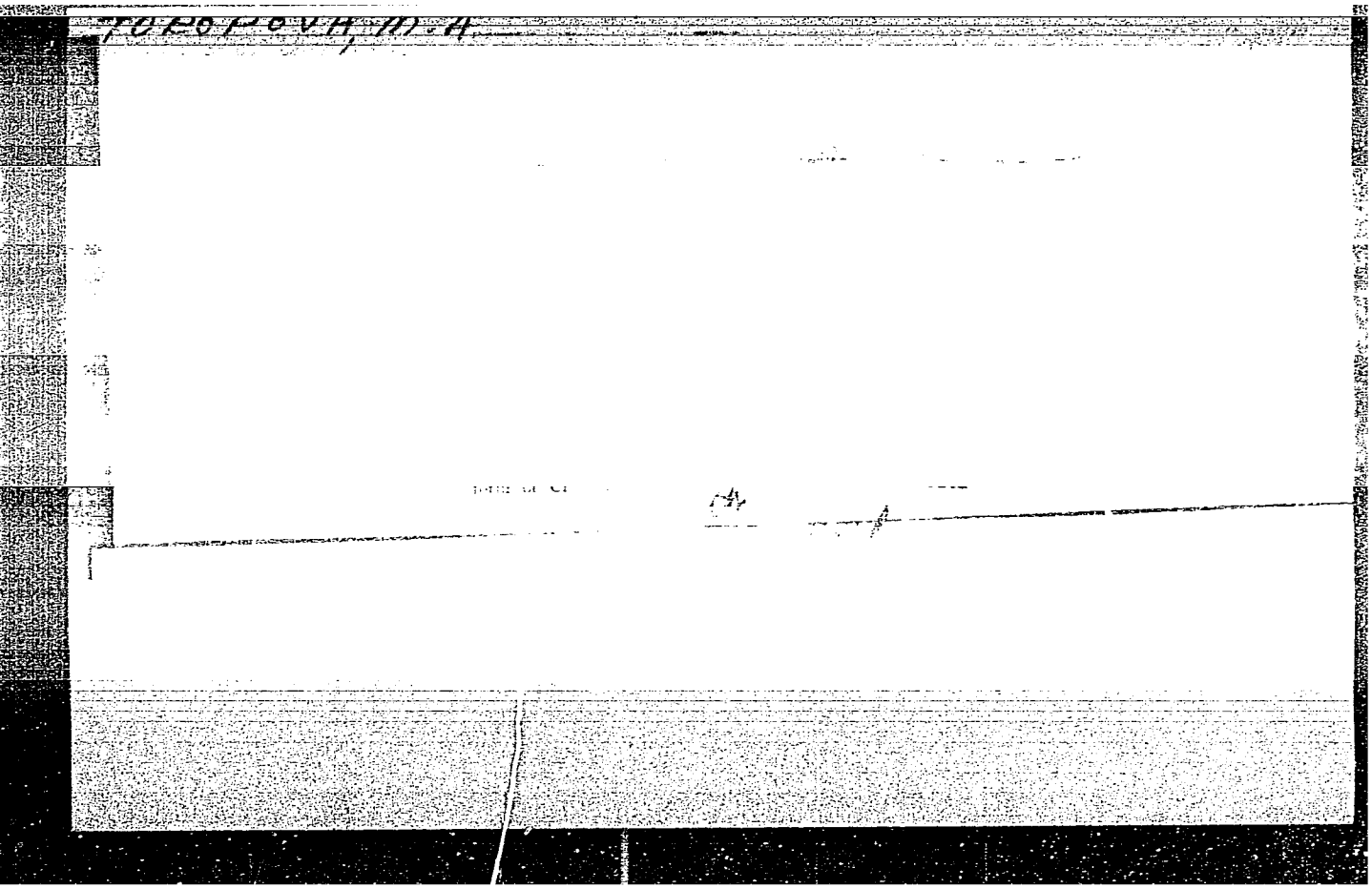

Toropova, M.A.

B-7

USSR/Physical Chemistry - Radiochemistry, Isotopes.

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3735.

Author : V.D. Nefedov, M.A. Toropova.
Inst :
Title : Production of Carrier-Free Re^{188} by Method Based on Breakage of Chemical Bonds at β -Dissociation.

Orig Pub: Zh. neorgan. khimii, 1957, 2, No 7, 1667-1671.

Abstract: A rapid method of separating carrier-free Re^{188} using $W(CO)_6$ (I) was developed. Re^{188} generates at the β-dissociation of W^{188} forming at a successive capture of two neutrons by a W^{186} nucleus. WCl_6 was obtained from WO_3 (irradiated with slow neutrons), after which I was obtained and purified of inorganic Re forms by distillation with steam and sublimation in vacuo. 500 mg of I was dissolved in 10 mlit of chloroform and the solution was aged in order to accumulate Re^{188}. It was extracted with 10 mlit of distilled water, the aqueous layer was

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[illegible] was revealed [illegible] about 60% of Re^{188} accumulation was [illegible] $W(CO)_5$- takes place under these conditions.

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TOROPOVA, M.A.

78-1-32/43

AUTHORS: Nefedov, V. D., Toropova, M. A.

TITLE: Use of Carbonyls for the Isolation of the Radioisotopes Cr^{51}, Mo^{99}, W^{187}, Tc^{99m} and Re^{188} (Ispol'zovaniye karbonilov dlya vydeleniya radioizotopov Cr^{51}, Mo^{99}, W^{187}, Tc^{99m} i Re^{188})
Concentration of Cr^{51}, Mo^{99} and W^{187}
(Kontsentrirovaniye Cr^{51}, Mo^{99} i W^{187})

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 1, pp. 175-180 (USSR)

ABSTRACT: When stable nuclei are irradiated by thermal neutrons the latter are captured by the nuclei of stable isotopes. The reaction (n,γ) takes the greatest part in this process. The radioactive isotopes originating in this process have a neutron excess and generally decompose in consequence of β-irradiation. Since the capture cross-section for this reaction generally is sufficiently large a great quantity of extremely valuable radioactive preparations can be produced

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Use of Carbonyls for the Isolation of the Radioisotopes Cr^{51}, Mo^{99}, W^{187}, Tc^{99m} and Re^{188}
Concentration of Cr^{51}, Mo^{99} and W^{187}

by means of the beforementioned reactions. As the chemical characteristics of the isotopes formed at this kind of nuclear transformation and of the inactive atoms of the target are almost the same, their separation is connected with difficulties. In the author's opinion hexacarbonyls of Cr, Mo and W are the most suitable compounds being used for the enrichment of radioactive isotopes. Virtually they are the only steady crystallinic compounds of these elements in which the metal is bound to the remaining part of the molecule by a covalent bond. Furthermore, hexacarbonyls are easy to be purified and are rather resistant against irradiation. Since all 3 carbonyls are soluble in water and in organic solvents, their applicability for extraction of the abovementioned isotopes was presupposed. The carbonyls were shortly irradiated with neutrons. Thereby the radioisotope Cr^{51}, Mo^{99} and W^{187} (after decay of the short-lived isotopes Cr^{55} and Mo^{93m}). The crystals of the carbonyls were dissolved in chloroform and the isotopes were extracted by water. Table 1 shows the concentration

Use of Carbonyls for the Isolation of the Radioisotopes Cr^{51}, Mo^{99}, W^{187}, Tc^{99m} and Re^{188}
Concentration of Cr^{51}, Mo^{99} and W^{187}

factors ($1,8 \cdot 10^4$, $3 \cdot 10^4$ and $0,7 \cdot 10^4$) as well as the yield (30, 34 and 55%). The yields decrease according to the sequence W - Mo - Cr, which may be explained by the different degree to which the γ- quanta of the capture of these elements are converted. The concentration factor, on the contrary, tends towards an increase from W to Cr. This dependence can be explained by the different chemical stability of these carbonyls on the condition of their isolation. Isolation of Tc^{99m} and Re^{188} without carrier. Also in this case $Mo^*(CO)_6$ and $W^*(CO)_6$ can be used for the concentration of radioisotopes which form in a β-decay of Mo^{99} - and W^{188} isotopes. As initial preparation of the latter corresponding carbonyls with a content of the isotopes Mo^{99} and W^{188} are synthetized from the respective oxydes with high specific activity. In the decomposition chains Tc^{99m} and Re^{188}, form, too. From crystals of the carbonyls in question or from chloroform solutions the latter isotopes were extracted by means of water. It was found out from their

Card 3/4

half-life (figure 4,5) that both isotopes have been obtained without carrier and were radiochemically pure. The predominant stabilization form of radioactive chromium isolated out of a chloroform solution of $Cr(CO)_6$ by water-extraction is trivalent. The radioactive W-atoms which remain unextrated by water belong to the initial compound -tungsten-hexacarbonyl. This may also be assumed with Cr and Mo. After a water extraction Re^{188}, accumulated in the tungsten-hexacarbonyl crystals, remains in a larger amount than in the case of concentration in chloroform solutions. The proportion of W^{188}-decay which leads to Re^{188m} amounts to less than 1-2 % of the total number of transformations.
There are 6 figures, 1 table, and 14 references, 5 of which are Slavic.

SUBMITTED: June 18, 1957

AVAILABLE: Library of Congress

Card 4/4

TOROPOVA, M.A.

78-1-42/43

AUTHORS: Nefedov, V. D. , Toropova, M. A.

TITLE: Isolation of Technetium-99m Without Carrier by Means of Breaking Chemical Bonds During β-Decomposition (Vydeleniye tekhnetsiya-99m bez nositelya metodom narusheniya khimicheskikh svyazey pri β-raspade)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 1, pp. 231-234 (USSR)

ABSTRACT: Methods of production of Bi^{210} (RaE), Bi^{212} (ThC) and In^{113m} were developed in the works (reference 1 to 3) which are based upon the destruction of the co-valent bonds of the element-organic compounds by the processes of the $\beta\pm$ -decay and K-capture. This destruction is a result of both the changes in the shells of electrons of the daughter atom in consequence of the self-ionization-processes and the inner conversion together with the accompanying effect by Ozhe, as well as the change of the chemical properties of the element. The authors count 21 radioactive isotopes (and even more) which can be

Card 1/4

Isolation of Technetium-99m Without Carrier by Means of Breaking Chemical Bonds During β - Decomposition

isolated from the conversion-chains of the radio-elements due to division, a penetrating separation by the radiation-capture of the neutron, ordinary cyclotron reactions and by the decay into the series without carriers (reference 4 to 6). Continuously operating sources of radioactive isotopes of a number of elements can be produced here in many cases. Mo^{99} as ingredient of hexacarboxyl was used for the problem referred to in the title. Tc^{99} can be produced in metastable state by various nuclear reactions: Ru^{99} (n,p)Tv^{99m}, Th(Φ)Tc^{99m}, $Mo^{99}(\beta^-)Tc^{99m}$. The latter method was applied here. The irradiation of molybdenum with slow neutrons leads to the formation of several radioactive isotopes, amongst which also is Mo^{99}($T^{1}/2$ = 63,5 hours). As mentioned above, the β-decay leads to Tc^{99m} ($T^{1/2}$ = 6,1 - 6,7 hours), which by means of an isomeric transition results in a long-lived technetium-isotope. The decay scheme of Mo^{99} (reference 4) is shown in figure 1. After a brief experimental part the authors pass over to the methods of isolation of Tc^{99m}. Tc^{99m} was extracted with double distilled water from a chloroform-, or ether-solution of hexacarbonyl. Decay curves of the preparations

Isolation of Technetium-99m Without Carrier by Means of Breaking Chemical Bonds During β-Decomposition

of Tc^{99m} produced herewith are shown in figure 3. They prove a radioactive half-life of 6,5 hours (with reference 12 to 14 corresponding to a wide extent). Determination of the yield of Tc^{99m}. Since stable technetium-isotopes are missing the general method of determination by means of an isotope carrier cannot be applied here. Non-specific carriers, e.g. manganese dioxide, can serve here with sufficient accuracy. It was assumed that the whole Tc^{99} obtained from the decay of Mo^{99} exists in an anorganic form. Sodium permanganate solution in acetone was introduced in a solution of molybdenum--hexacarbonyl irradiated with neutrons. Technetium was adsorbed on the amply developing voluminous MnO_2-deposit. The activity of the hence obtained centrifugates was measured by means of a -counter. The activities determined were compared with those of the initial solution of molybdenum carbonyl in chloroform and of the chloroform solution, which was obtained on account of the extraction of technetium. Tc^{99m} was computed according to the formula: $B = \frac{A_o - A_1}{A_o - A_Z}$

Isolation of Technetium-99m Without Carrier by Means of Breaking Chemical Bonds During β - Decomposition

by comparison of the obtained results, in which case A_0 denotes the initial activity of the chloroform solution; A_1 the same after the extraction of Tc^{99m} and A_2 the activity of the centrifugate. The test results are given in table 1. It may be concluded hence that the applied method leads practically to a complete extraction of Tc^{99m}. There are 3 figures, 1 table, and 15 references, 6 of which are Slavic.

SUBMITTED: December 10, 1956

AVAILABLE: Library of Congress

TOROPOV, V., karbyuratorshchik.

New-type tuning of the K-22E carburetor. Avt. transp. 36 no.1:33 Ja '58. (MIRA 11:1)

(Automobiles--Engines--Carburetors)

TOROPOV, V.

Petia Siniaev's blue foxes. IUn.nat. no.9:28 S '60.
(MIRA 14:3)
(Motion pictures, Documentary)

TOROPOV, V.

"Children and ducklings"; a motion-picture film. IUn. nat. no.8:35 Ag '62. (MIRA 15:9)
(Motion-picture plays)

TOROPOV, V. A.

FA 20/49T45

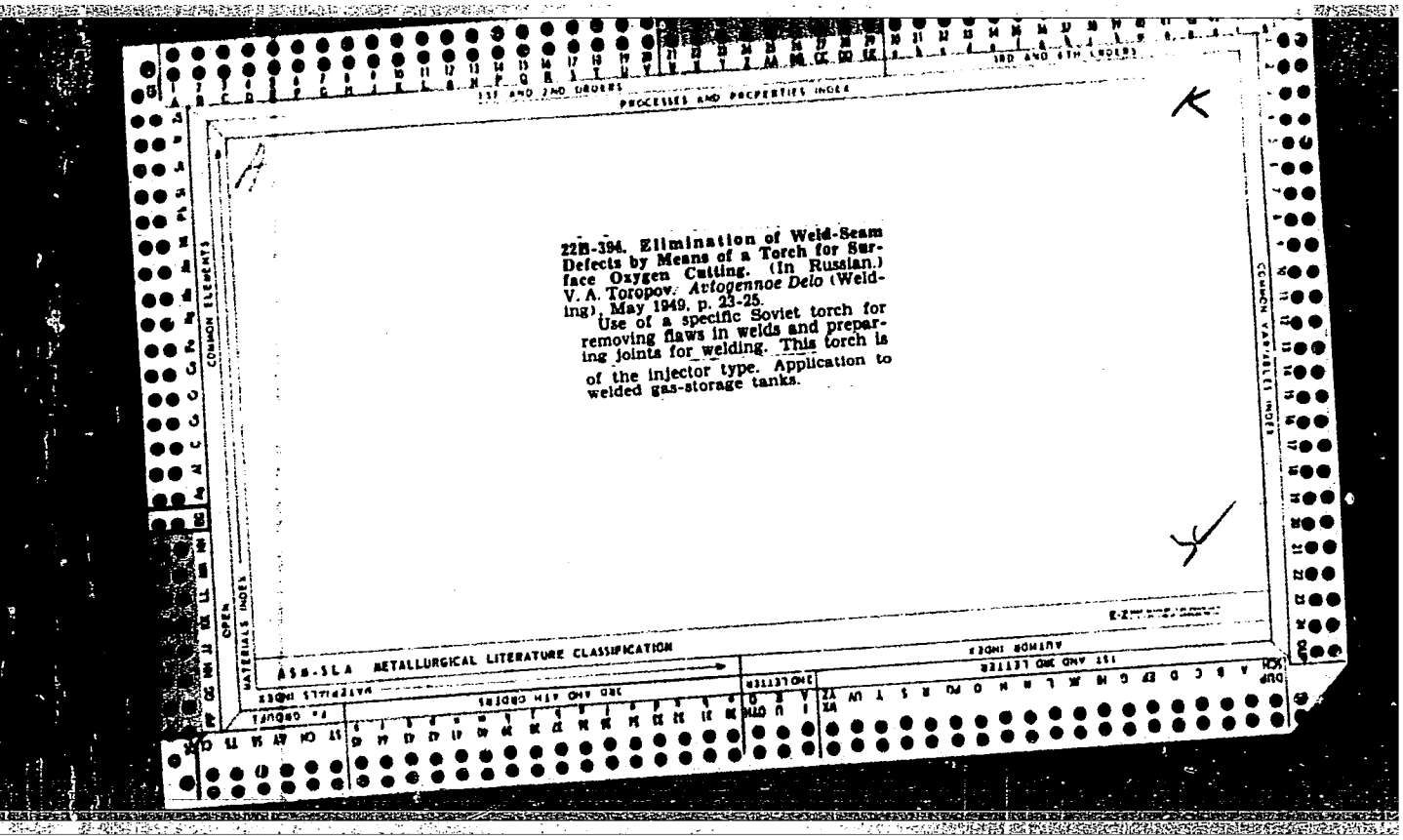
USSR/Engineering Sep 48
Cutting Torches
Steel, Cutting

"Semiautomatic Machine for Gas Cutting of Steel Thicknesses of From 100 to 300 Millimeters," G. M. Kazanov, V. A. Toropov, Engineers, All-Union Sci Res Inst of Autogenous Welding, 1 3/4 pp

"Avtogennoye Delo" No 9

Describes trials of machine produced by VNIIAVTOGEN. Includes one table, and three photographs.

[redacted] 20/49T45



22H-394. Elimination of Weld-Seam Defects by Means of a Torch for Surface Oxygen Cutting. (In Russian.) V. A. Toropov. *Avtogennoe Delo* (Welding), May 1949, p. 23-25.

Use of a specific Soviet torch for removing flaws in welds and preparing joints for welding. This torch is of the injector type. Application to welded gas-storage tanks.

TOROPOV, V. A. Dec 52

USSR/Metallurgy - Flame Cutting, Processes

"On the Heating Flame in Mechanized Oxyacytelene Cutting," Engr V. A. Toropov

Avtogen Delo, No 12, pp 10-12

Investigates possibility of decreasing intensity of heating flame after beginning of cutting process. Steel plates 80, 130 and 180 mm thick were used for expts. Concludes that such decrease gives more stable width of cut but reduces productive capacity of process, and therefore tips with reduced intensity of heating flame may be used only for vertical cutting of steel in cases when precision of cutting is more essential than productivity.

266T41

TOROPOV. V. A., Eng.

Oxyacetylene Welding and Cutting

Designing templets for gas metal-cutting apparatus, Avtog. delo, 23, No. 6, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1952 1953, Uncl.

1. TOROPOV, V. A., Eng.

2. USSR (600)

4. Oxyacetylene Welding and Cutting

7. Heating flame in mechanized oxyacetylene cutting. Avtog. delo, 23 no. 12, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

TOKOPOV, V. A., Kand. Of Tech. Sci., LYUBAVSKIY, K. V., Dr. of Tech. Sci., PASHUKANIS, F. I., Eng., and LAZAREV, B. I., Kand. of Tech. Sci.

SVARKA AUSTENITNYKH STALEY, PREDNAZACHENNYKH DLYA RABOTY PRI POVYSHENNYKH TEMPERATURAKH (Welding of Austenitic Steels Designed to Withstand High Temperatures). In K. V. Lyubavskiy, ed. Novoye v tekhnologii svarki (Innovations in the Welding Technique). MAShGIZ, 1955. p. 3-29.

The authors present an interpretation of the data obtained in research conducted by the Central Scientific Research Institute of Machine-Building Technology (TsNIITMASh) on arc welding of austenitic steels used in forging, casting and tubing. The temperatures in various places in the welded parts are observed. The crystallization which occurs in welded metals, the mechanical properties of welded sections, and the structure of the metal in the seam after welding are discussed. The use of electrodes and their effects on various austenitic steels under different conditions in welding and on welding parts are described. The authors recommend certain electrodes for welding austenitic steels used in tubing, forging and castings. Twenty seven pictures and graphs, 9 tables. 3 Russian references (1936-1951).

1/1

TOROPOV, V. A.

TS227.L66 TREASURE ISLAND BOOK REVIEW AID 782 - S

TOROPOV, V. A., Kand. of Tech. Sci., and LYUBAVSKIY, K. V., Dr. of Tech. Sci.

K VOPROSU OBRAZOVANIYA TRESHCHIN PRI DUGOVOY SVARKE AUSTENITNYKH STALEY (Origin of Hot Flows in Arch Welding of Austenitic Steel). In K. V. Lyubavskiy, ed. Novoye v tekhnologii svarki (Innovations in the Welding Technique). MASHGIZ, 1955. p. 30-55.

The authors discuss some causes of 'hot flows', certain defects in cast metal which are one of the outstanding difficulties in the welding of austenitic steels. The Kh18N9T - mark of steel is one of the most widely used of this steel group. They fully discuss the results of investigation of the influence of sulfur and manganese, silicon, carbon, columbium, molybdenum, tungsten, and vanadium used in the formation of high-alloyed austenitic steels, and make suggestions for practical application of the results obtained. Sixteen pictures and graphs, 7 tables. 21 Russian references, 1941-1952.

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SOV/137-57-10-19447

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 10, p 143 (USSR)

AUTHORS: Lyubavskiy, K.V., Toropov, V.A.

TITLE: On Causes of Hot Cracking During Arc Welding of Austenitic Steels (K voprosu o prichinakh obrazovaniya goryachikh treshchin pri dugovoy svarke austenitnykh staley)

PERIODICAL: V sb.: Probl. dugovoy i kontakt. elektrosvarki. Kiyev-Moscow, Mashgiz, 1956, pp 117-134

ABSTRACT: The authors present in their work some considerations of causes of hot cracking (HC) and discuss the significance of the ferrite phase in high-alloyed austenitic welds (W). In order to verify certain hypotheses regarding the effect of various degrees of solubility of elements in the austenite and ferrite phases on tendency of W toward HC, the effect of S, Mn, P, Si, C, Nb, Mo, tungsten, and V was investigated. It is confirmed experimentally that the resistance of weld metal to HC depends on the concentration of segregating elements present in the zone of fusion, as well as on the degree to which certain of these elements, namely those which tend to segregate and form relatively fusible eutectics, are soluble in phases undergoing crystallization. This last statement applies also to

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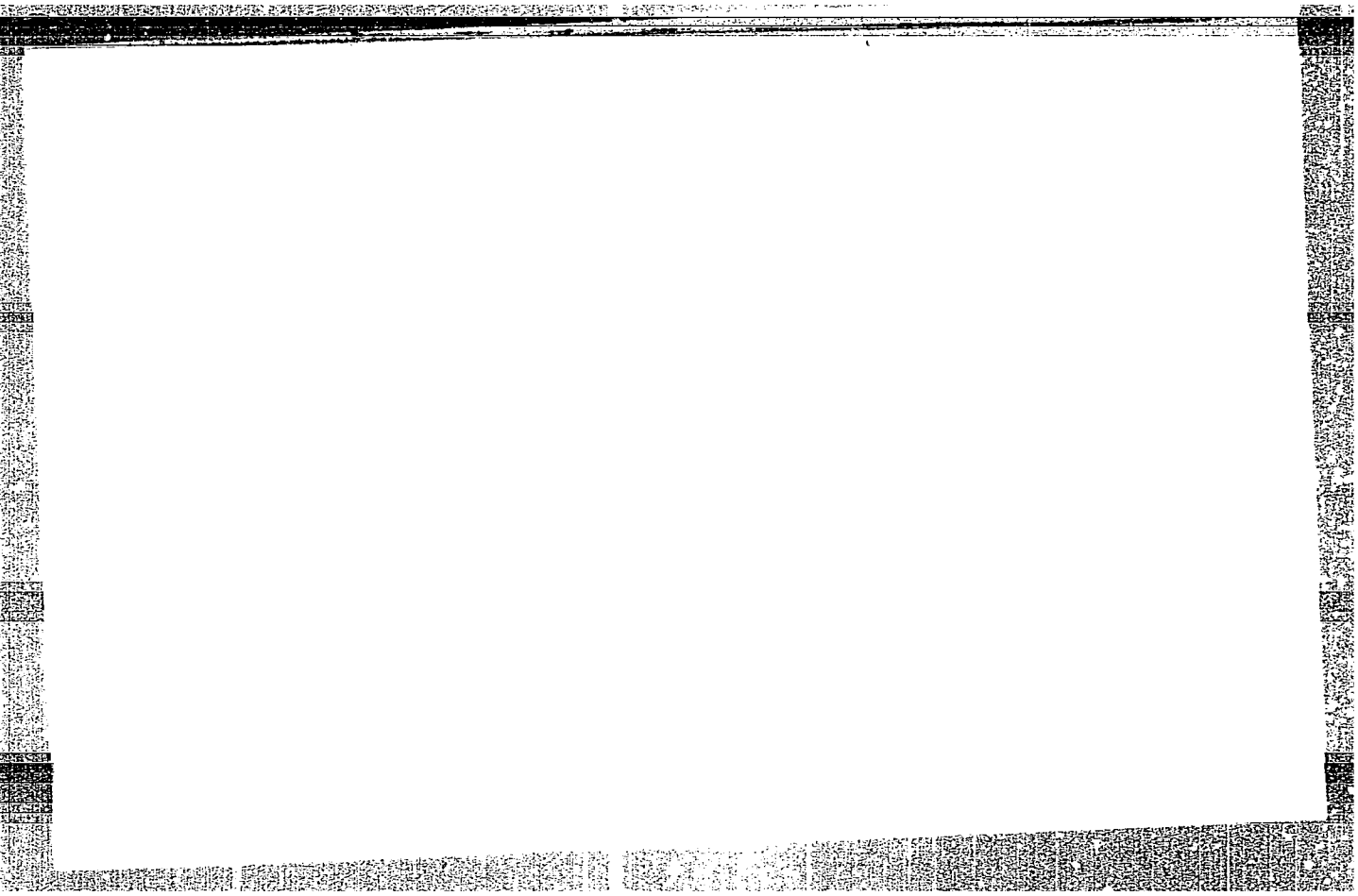
On Causes of Hot Cracking During Arc Welding of Austenitic Steels

ferrite-forming elements (Si, Nb, V) which are sparingly soluble in austenite. The fact that the ferrite phase (primary ferrite) reduces the HC tendencies of austenitic W is attributable to the ability of δ ferrite (as compared with the γ solution) to dissolve greater amounts of Nb, Si, V, P, etc., reducing at the same time the segregation of these elements and limiting the formation of fusible eutectics along the boundaries of crystals. Increasing the concentration of Ni eliminates the δ ferrite in the process of crystallization of the W and, all other conditions being equal, increases the susceptibility of the latter to the formation of hot cracks produced by ferrite-forming hardening elements and by P. The effect of S on HC tendencies of austenitic W, both with and without a ferrite phase varies considerably depending on the concentration of Mn and Ni in the metal of the W. Increasing the concentration of Mn reduces the HC tendencies of the W. A certain amount of ferrite or V prevents the formation of hot cracks produced by Si and Nb. Mo and tungsten do not form fusible eutectics in alloys containing Ni, Cr, and Fe, and, therefore, do not produce HC of austenitic W at the concentrations investigated.

A.R.



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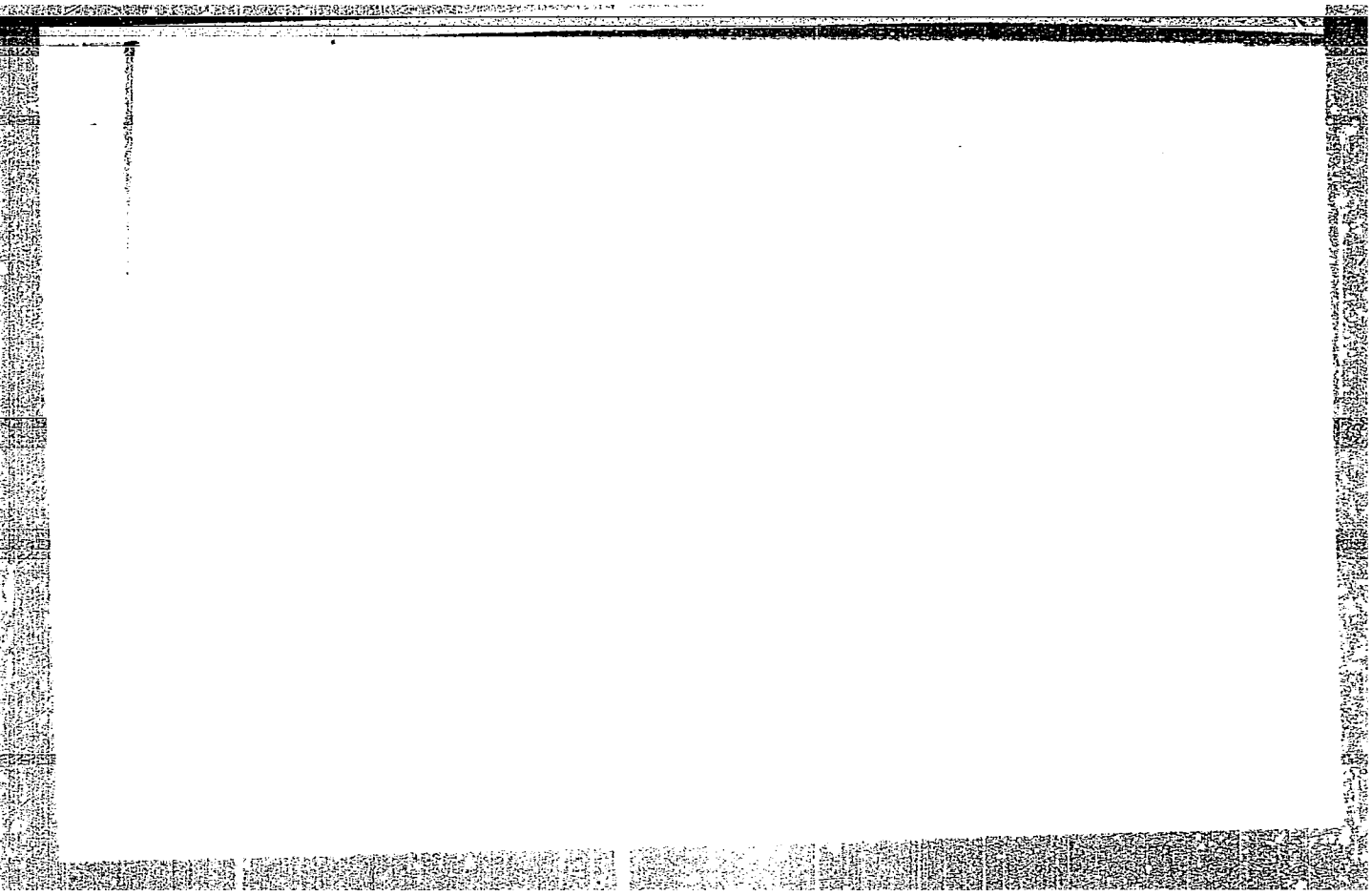

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TOROPOV, V. A. and MART'YANOV, G. I.

"Manufacturing Welded Rotors From Austenitic Steel (From the Experience of the Leningrad Metal Plant (LMZ) and the Central Scientific Research Institute of Technology and Machine Building (TsNIIMASh)," by V. A. Toropov, Candidate of Technical Sciences, and Engr G. I. Mart'yanov, Energomashinostroyeniye, No 11, Nov 56, pp 18-20

The technological process of the welding and heat treatment of turbine rotors made of austenitic steel, guaranteeing low radial and axial deformation of the rotor, is presented. "At present welding is the only technological method permitting the manufacture of austenitic steel rotors weighing tens of tons. The manufacture of such rotors by casting or by seamless forging does not seem possible at present because of the absence of suitable smelting and forge-press equipment."

The absolute necessity for precise finished measurements, for the precise axial positioning of the parts lying in the flow part of the turbine, and the very rigid tolerance in rotor wobble, after welding and heat treatment, led to the development of a rotor welding method.

"Standard rotors manufactured in the plant according to the developed methods of welding and heat treatment comply fully with established technical requirements."

Data on wobble and shrinkage obtained during the welding and heat treatment of the test gas turbine rotor together with schematic diagrams are included.

Sum 1239

AUTHOR: Toropov, V. A., Candidate of Technical Sciences.

TITLE: On the mechanism of formation of hot cracks in the weld seams. (O mekhanizme obrazovaniya goryachikh treshchin v svarnykh shvakh).

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.6, pp.54-58 (U.S.S.R.)

ABSTRACT: Various authors (1-4) hold the view that hot cracks in weld seams are formed during the final stage of crystallisation when the solidifying crystallites separate out [illegible] liquid interlayers as a result of liquation of some elements. The opinion of welding engineers is in agreement with the opinion of foundry metallurgists relating to the mechanism of hot cracks in castings. According to the theory of A.A.Bochvar hot cracks in castings form at temperatures exceeding the solidus point as a result of the shrinkage stresses caused by the formation of a continuous rigid skeleton of dendrites which is capable of resisting shrinkage. Several authors (1, 3, 6) established that the fundamental cause of higher stability of seams with an austenite-ferrite structure against formation of hot cracks is the increased solubility of various elements in the ferrite which leads to a strengthening of the crystallite boundaries.

On the mechanism of formation of hot cracks in the weld seams. (Cont.)

In earlier work (7) the author established that an increased content of C and Si in steel of the type 16-25-6 (Cr-Ni-Mo) up to concentrations leading to the formation in the seam structure of a continuous network of inclusions of the ledeburite type permits to prevent formation of hot cracks, whilst introduction into such seams of slight quantities of S and P did lead to the formation of hot cracks. On the basis of previous results and of results of other authors, it is concluded that the tendency to form hot cracks in the metal of weld seams is determined not only by the quantity of intercrystallite components but also on their properties, of which the temperature and the character of the crystallisation of the inter-crystallite components has the largest influence. Change in the quantity and in the properties of the inter-crystallite components in complex multi-element weld seams for reducing the tendency to hot crack formation can be achieved by means of an optimum chemical composition of the metal of the weld seam, namely, by changing the relative contents of the individual components and by introducing new components. The author considers it advisable in the case of multi-element metals to consider not only

On the mechanism of formation of hot cracks in the weld seams. (Cont.) 662

binary but also more complex diagrams of state. It is considered advisable to continue more thorough investigation of the processes of crystallisation of complex alloys and to investigate by modern methods the composition and the properties of the inter-crystallite components of the metal of the weld seam. 2 figures, 13 references, all of which are Slavic.

ASSOCIATION: TsNIITMASh.

AVAILABLE:

Card 3/3

SOV-135-58-10-8/19

AUTHOR: Toropov, V.A., Candidate of Technical Sciences

TITLE: Peculiarities in Welding the First Layer of Butt Joints in Gas Turbine Runners (Osobennosti svarki pervogo sloya stykovykh shvov rotorov gazovykh turbin)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 10, pp 24-26 (USSR)

ABSTRACT: In order to eliminate deficiencies in welding the first layer of butt joints in austenitic steel turbine runners, laboratory tests carried out on flat specimens with a support plate of "OKh18N9" austenitic steel, resulted in developing a new design of a support ring for butt welding of runner seams with the use of a coated metal electrode. This support ensures the formation of the first layer of the joint without latent fractures, in spots where the support ring contacts the weldable part. It was stated that formation of latent fractures in narrow gaps between the support and the beveled edges can be eliminated by widening these gaps. The new support ring ensures the neces-

Card 1/2

Peculiarities in Welding the First Layer of Butt Joints in Gas Turbine Runners

sary gap width and can also be used for other one-side butt welded work. There are 5 sets of photos, 4 diagrams and 8 references, 7 of which are Soviet .

ASSOCIATION: TsNIITMASh

1. Steel--Welding 2. Welded joints--Test methods

Card 2/2

SOV/135-59-1-4/1

AUTHOR: Toropov, V.A., Candidate of Technical Sciences

TITLE: Properties of "1Kh15N25M5" Type Austenitic Welds Under High Temperatures (Svoystva austenitnogo shva tipa 1Kh15N25M5 pri vysokikh temperaturakh)

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 1, pp 12-16 (USSR)

ABSTRACT: The crack resitance of weld joints is higher when electrodes ensuring eutectic ferrite and austenite phases in the weld metal are used. In this connection, the author, under the supervision of Professor K.F. Lyubavskiy, Doctor of Technical Sciences, carried out investigations of electrodes producing several variants of the "K15N25M5" type metal. It was proved that electrodes with a "Kh15N25M5" basis ensure stable

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Properties of "1Kh15N25M5" Type Austenitic Welds Under High Temperatures

structure and properties of welds in extended use (100,000 hrs) at temperatures of up to 650°C, or in the case of reduced duration, at higher temperatures. There are 4 tables, 5 graphs, 1 set of microphotos and 7 Soviet references.

ASSOCIATION: TsNIITMASh

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SOV/135-59-9-4/23

18(5,7)
AUTHOR: Toropov, V. A., Candidate of Technical Sciences

TITLE: Research on Arc Welding of Heat Resistant Austenitic Steel Type EI572

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 9, pp 11-15 (USSR)

ABSTRACT: The author presents some results of research on the weldability of austenitic steel type EI572. This steel contains 19% chromium, 9% nickel and as reinforcing elements molybdenum, tungsten, titanium and niobium. It has constant strength at a temperature of 600°C. In some cases it can be used for work even at temperatures up to 650°C. The test electrodes were made of standardized wire type Sv-0Kh18N9, according to GOST 2245-54. Table 1 shows the chemical composition of the metal, melted with different test-electrodes. The heat treatment of the samples was realized under the following conditions: 1) heating to 800, 850, 900, 950, 1000 and 1050°C with air cooling; 2) heating to the same temperatures with cooling in the furnace (20°C/h). Mechanical tests of the weld metal (after welding with elec-

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trode type T18) showed the following qualities at room temperature: $\sigma_V \geq 67.5$ Kg/mm^2; $\sigma_T \geq 44.5$ Kg/mm^2; $\delta_5 \geq 45\%$; $a_n \geq 10.5$ Kgm/cm^2. These qualities were not changed considerably by heat treatment at 800 and 850°C. As a result of this research the electrode type TsT-5-57 was worked out. At a temperature of 600°C the constant strength of the weld metal, which is stabilized at 810°C, is more than 22 Kg/mm^2 (100,000 hrs). Optimum stabilization is at temperatures between 800 and 820°C. The works of Yu. I. Kazennov, [Ref 3], B. I. Medovar, [Ref 4 and 5] and A. A. Bochvar [Ref 6 and 7] were used for this study. Engineer V. S. Levakov, Candidate of Technical Sciences, N. I. Burova (both TsNIITMASh) and G. I. Matr'yanov (LMZ) participated in this study. There are 6 photographs, 5 graphs, 1 table and 8 Soviet references.

ASSOCIATION: TsNIITMASh

Card 2/2

Toropov, V.A.

PHASE I BOOK EXPLOITATION SOV/4343

Soveshchaniye po teorii liteynykh protsessov, 3d

Usadochnyye protsessy v metallakh; trudy soveshchaniya (Shrinkage Processes in Metals; Transactions of the Third Conference on the Theory of Casting Processes) Moscow, AN SSSR, 1960. 281 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: B.B. Gulyayev, Doctor of Technical Sciences, Professor; Ed. of Publishing House: V.S. Rzheznikov; Tech. Ed.: T.V. Polyakova.

PURPOSE: This collection of articles is intended for scientific workers, engineers, technicians of scientific research institutes and industrial plants, and for faculty members of schools of higher education.

COVERAGE: The collection contains technical papers presented at the Third Conference on the Theory of Casting Processes, organized by Liteynaya sektsiya Komissii po tekhnologii mashinostroyeniya Instituta mashinovedeniya AN SSSR (Casting Section of the Commission for Machine-Building Technology of the Institute of Science of Machines, Academy of Sciences USSR) and by Institut metallurgii imeni Baykova AN SSSR (Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR). The most serious defects in castings, ingots, and welds as a result of metal shrinkage are reviewed. Factors contributing to the formation of shrinkage cavities, porosity, cracks, fissures, distortion, and internal stresses are analyzed along with measures taken to prevent and remedy them. The hydrodynamics of molten metals and the process of solidification of metals are discussed. Also presented are resolutions adopted at the Conference with regard to the problem of shrinkage in metals. No personalities are mentioned. Most papers are accompanied by bibliographic references, the majority of which are Soviet.

TABLE OF CONTENTS:

Shrinkage Processes (Cont.) SOV/4343

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AUTHORS: Dinerman, A.P., Merinov, G.N., Engineers and Toropov, V.A., Candidate of Technical Sciences

TITLE: Operating Experience with the Welded Rotor of an Experimental Gas Turbine of TsNIITMASh Type ЭГТУ-700 (EGTU-700)

PERIODICAL: Energomashinostroyeniye, 1961, No. 1, pp. 31 - 35

TEXT: In 1950 TsNIITMASh (Central Scientific Research Institute of Technology and Machine Building) developed and operated an experimental gas turbine type EGTU-700 The main use of the set was in studying the strength of blade steel by means of a model and making full-scale tests on turbine blades under conditions close to those encountered in service. The programme involved testing blades to failure. A cross-sectional diagram of the gas turbine is given; it had a welded rotor. The turbine delivered no useful power, all the energy of the gas being expended in overcoming friction. The gas temperature at the guide vanes

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S/114/61/000/001/007/009
E194/E355

Operating Experience with the Welded Rotor of an Experimental Gas Turbine of TsNIITMASh Type EGTU-700

was 700 °C and the turbine speed was 4 200 r.p.m. Until this turbine had been built no welded rotors had been used in Soviet turbine manufacture and a welded rotor was incorporated in this turbine so that a thorough check could be made on its operating properties. During 25 000 hours operation of the turbine the performance of the rotor was carefully observed in respect of stability of shape and dimensions. Watch was also kept on the operating conditions. After 25 000 hours operation the rotor was cut up into samples and thoroughly examined. The rotor was made of steel grade ЭИ405 (EI405). Its heat treatment and welding are described; analyses of the main and weld metal are given. During running, the gas temperature was 700 °C, the disc-rim temperature was 630 - 635 °C and the weld temperature was 600 - 620 °C. During its period of operation the turbine was started and stopped more than 1 800 times and of these 250 starts were from cold. During operation there were

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S/114/61/000/001/006/009
E194/E355

Operating Experience with the Welded Rotor of an Experimental Gas Turbine of TsNIITMASh Type EGTU-700

75 cases of blade failure and at each the rotor experienced a sudden impact load of up to 5 tons, leading to bending stresses in the welds of up to 250 kg/cm^2.
The behaviour of the rotor was carefully observed in service. Vibration measured on the bearing frame was 6 - 10 μ at the start and after 25 000 hours operation had increased to 18 - 20 μ. Systematic measurements of the rotor showed that the external diameter of the rim increased by 0.45 mm in 25 000 hours, which is about 0.08%. Analysis showed that the rate of disc strain was greatest during the period of a large number of starts and stops as compared with other periods. After 8 000 - 9 000 hours operation some cracks were observed at the place where the blades were fitted to the rim and at the end of operation of the turbine the cracks had extended and increased in width up to 0.4 - 0.5 mm. Cracking started during a period of intensive operation of the turbine under variable conditions with frequent starts and stops. The disc

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Operating Experience with the Welded Rotor of an Experimental Gas Turbine of TsNIITMASh Type EGTU-700

and neighbouring parts of the blade roots underwent appreciable erosive-corrosive wear during the first 500 - 700 hours. After 3 000 hours of operation the oxide film was completely removed from the rotor. The thickness of the layer removed was 0.2 mm and the rotor surface became uniformly rough and of a grey colour.
Metallographic sections were made of the rotor and weld metal. Both before and after operation the microstructure of the main metal consisted of austenite, carbides of niobium and a finely-dispersed phase which was not identified. The amount of this finely-dispersed phase increased during service. The microstructure of the weld metal after service consisted of austenite and carbides. A finely-dispersed phase was evolved in service. Mechanical tests were made on the metal.
During service the plastic properties of the main metal of the rotor were impaired, particularly the impact strength, which, on tangential specimens, fell from 7.3 to 2.6 kg.m/cm^2.

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S/114/61/000/001/006/009
E194/E355

Operating Experience with the Welded Rotor of an Experimental Gas Turbine of TsNIITMASh Type EGTU-700

After 25 000 hours operation the weld metal had very poor plastic properties, the impact strength was about 1 kg.m/cm^2, the relative extension 5% and the constriction 8% at room temperature. After 25 000 hours operation the weld metal broke after bending through a very small angle (30 - 35°) but the main metal retained high plasticity in the axial direction and reduced plasticity in the tangential specimen (angle of bending 50 - 55°).
It is concluded that the welded rotor was substantially undeformed after service. The weld became much more brittle. It is concluded that if the weld metal has 5-8% relative elongation and 1 to 1.5 kg.m/cm^2 impact strength its plastic properties are adequate for reliable operation in rotors of the kind and subject to the conditions described.
There are 5 figures and 3 tables.

Card 5/5

3452
S/184/62/000/002/004/004
D041/D112

1.2300

AUTHORS: Toropov, V.A., Candidate of Technical Sciences;
Gerasimenko, G.I., Engineer

TITLE: Welding of cast nickel-molybdenum alloys

PERIODICAL: Khimicheskoye mashinostroyeniye, no. 2, 1962, 33-36

TEXT: The article contains the results of experiments for determining the casting and corrosion characteristics of nickel-molybdenum alloys carried out at NIIKhIMMASh. The purpose was to develop a technology for welding up defects in castings from nickel-molybdenum alloys. Since nickel-molybdenum alloys have a low heat conductivity, the castings were welded without preheating, each subsequent seam layer being welded after the lower layer had cooled, using a minimum current density. XH-1 (KhN-1) electrodes were used, for which the authors received author's certificate no. 141231, dated Jan 17, 1961. The electrodes have good technological properties making it possible to obtain a weld metal whose chemical composition is analogous to

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Welding of cast ...

that of the base alloy. The weld metal has the following composition: no more than 0.04% C; 0.15-0.35% Si; 0.2-0.7% Mn; no more than 0.025% S and P; 27-30% Mo; no more than 6% Fe; base -- Ni. Gas and air arc-welding are not possible. Before the removal of defects, the castings must be heat-treated at 1,150-1,180°C for at least 30 minutes and air-cooled in order to eliminate the casting stresses and to improve the machining quality. The welding stresses were eliminated by heat treatment at 1,150-1,180°C and air-cooling. Small defects can be welded without subsequent heat treatment. The obtained welds have a good corrosion resistance and good mechanical properties. The corrosion tests were carried out under the guidance of G.L. Shvarts, Candidate of Technical Sciences, and the metallographic experiments by Engineer G.N. Shumratova. There are 4 figures, 3 tables, and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: R.C. Perritok, Phillips, "Welding and Metal Fabrication", v. 26, no. 3, 1958.

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S/125/62/000/006/012/013
D040/D113

AUTHORS: Makara, A.M., and Toropov, V.A.

TITLE: Welding problems at the International Scientific and Technical Conference of Machine-Building Technologists

PERIODICAL: Avtomaticheskaya svarka, 15 no. 6, 1962, 88-94

TEXT: The Sovet ekonomicheskoy vzaimopomoshchi (Council of Economic Mutual Assistance)-SEV convened the Mezhdunarodnaya nauchno-tekhnicheskaya konferentsiya tekhnologov-mashinostroiteley (International Scientific and Technical Conference of Machine-Building Technologists) in Prague in late 1961. Experience was exchanged and means of speeding up the industrial application of modern technology discussed. Detailed information on the Welding Institute in Bratislava and the Institute of Welding Equipment and Technology in Prague, including the equipment and methods used there, is given. Both institutes were visited by Soviet delegates after the conference. The following reports were heard: V.N.Zubko (USSR), "The development of progressive technology in heavy machine-building on the basis of specialized production"; Makara (USSR), "The state and trends of

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Welding problems at the International Scientific .....

development of welding techniques"; K.Kapral (ČSSR), "Progressive methods of the technological preparation of production"; J.Vrdlovy (ČSSR), "A new technology for producing modern machines and equipment"; Z.Faludi (Hungary), "A method of technically and economically planning technological development"; Toropov (USSR), "The present state and problems of welding in chemical machinery"; V.Hora (ČSSR), "The prospective development of modern methods in the production of chemical equipment", reference being made to a new high-pressure vessel designed at the Královo Pole Plant; L. Zawitnewicz (Poland), "Automatic welding equipment used for submerged arc welding of 1.5-4 mm thick sheets"; A.Zawitnewicz, Engineer, read a report describing welding of thin metal, and a special welding line equipped with AS8-600 motorized welders produced by the Welding Institute in Gliwice. Reference is made to a welding method and a flux developed by the Institut elektrosvarki im. Ye.O.Patona (Electric Welding Institute im. Ye.O.Paton) and now used in the CSSR.

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Welding problems at the International Scientific S/125/62/000/006/012/013
D040/D113

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O.Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O.Paton, AS UkrSSR) (Makara, A.M.); Moskovskiy nauchno-issledovatel'skiy institut khimicheskogo mashinostroyeniya (Moscow Scientific Research Institute of Chemical Machinery) (Toropov, V.A.)

Card 3/3

TOROPOV, V.A. (Leningrad K-67, Annikov prospekt, d.14,kv.135)

Some anatomical data on the clarification of the function of the anterior section of the foot. Ortop., travm. i protez. 26 no.9:39-45 S '65. (MIRA 18:10)

1. Iz Leningradskogo instituta protezirovaniya (direktor - dotsent M.V. Strukov).

TOROPOV, V.A., kand.tekhn.nauk; SHEVELKIN, B.N., kand.tekhn.nauk; SAMOCHATOV, I.M., inzh.; GERASIMENKO, G.I., inzh.

Technology of the manufacture of welded apparatus lined with thin-sheet, corrosion-resistant steel. Svar.proizv. no.2:26-27 F '64. (MIRA 18:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorskiy institut khimicheskogo mashinostroyeniya.

ACCESSION NR: AP4025738 S/0184/64/000/001/0030/0032

AUTHORS: Shevelkin, B. N. (Candidate of technical sciences); Toropov, V. A. (Candidate of technical sciences); Gerasimenko, G. I. (Engineer)

TITLE: Titanium lining of containers made of carbon steel

SOURCE: Khimicheskoye mashinostroyeniye, no. 1, 1964, 30-32

TOPIC TAGS: carbon steel, St.3 carbon steel, titanium plate, VT-1 titanium, corrosion, metal corrosion prevention, plating, welding, resistance welding, seam welding, contact-roller welding, welded connection, vacuum technique, leak detection, forging, hot forging, fagot weld

ABSTRACT: This study made it possible to develop the most effective welding procedure for installing unattached titanium linings into carbon steel containers used by the chemical industry. A sectional view of such a container (made of St.3 steel) with 400-liter capacity is presented in Fig. 1 on the Enclosure. Different techniques for welding the linings (6-8 mm thick) to various parts of the container are described. Lids and bottom parts of such vessels were made of welded fagots consisting of two steel disks with a titanium interlayer. Hot forging of the

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ACCESSION NR: AP4025738

fagots at 700-750C secured a good adherence of the lining to carbon steel. The shell of the containers was made of titanium sheets 0.5 mm thick, and called for welding by the contact-roller technique with a 4-6 mm overlap. Collars were stamped (or rolled) from argon-arc welded titanium sheet rings. Seam-welding was resorted to when these collars were attached to the shells. The outlets (50 mm in diameter) were made of titanium 0.5 mm thick. They were welded by a modified contact-roller procedure and were attached to the flanges by automatic argon-arc welding with infusible VT-15 electrodes. Vacuum testing technique was used in leak detection in the containers. The best results were obtained with helium leak testers. The authors claim that the results obtained by them are not inferior to those produced by argon-arc welding alone. They state that the resistance welding technique, which is much simpler of the two, should be applied more often. Orig. art. has: 2 tables and 4 figures.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 14Feb64	ENCL: 01
SUB CODE: ML	NO REF SOV: 000	OTHER: 000

Card 2/2

AM4020394 BOOK EXPLOITATION S/0783

Galitskiy, B. A.; Abelev, M. M.; Kolosova, L. P.; Toropov, V. A.; Shevelkin, B. N.

Titanium and its alloys in the chemical engineering industry (Titan i ego splavy* v khimicheskom mashinostroyenii) Moscow, Mashgiz, 1963. 263 p. illus., biblio. 2500 copies printed. Reviewer: Dombe, Yu. L.; Editor: Skvortsov, Ye. Ye. (Engineer); Deputy editor: Ry*bakova, V. L. (Engineer); Editor of the publishing house: Tairova, A. L.; Technical editors: El'kind, V. D.; Makarova, L. A.; Proofreader: Piryazev, P. A.

TOPIC TAGS: Titanium, titanium alloy , chemical engineering, machining of titanium, forming of titanium, welding of titanium

PURPOSE AND COVERAGE: This book was written for engineers and technicians at industrial establishments, design bureaus, and scientific-research institutes connected with the chemical engineering industry, as well as for engineers and technicians in industrial establishments utilizing chemical apparatus and equipment. It may be of use also as a study aid for students in machine-design vuzes and technicums. The construction of chemical equipment made of titanium is

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AM4020394

analyzed, and the special characteristics of the machining, forming, and welding of titanium and its low alloys utilized in the chemical engineering industry are outlined.

TABLE OF CONTENTS:

SUB CODE: MM, GC SUBMITTED: 30Sep63 NR REF SOV: 043

OTHER: 016

Card 2/2

GERASIMENKO, G.I., inzh.; TOROPOV, V.A., kand.tekhn.nauk

Deposition of a corrosion-resistant alloy on working surfaces of closing equipment. Svar.proizv. no.2:28-29 F '64.
(MIRA 18:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorskiy institut khimicheskogo mashinostroyeniya.

TOROPOV, V.A., kand.tekhn.nauk; KOLOSOVA, L.P., inzh.

Methods for the welding of titanium in machinery manufacture. Khim. mashinostr. no.6:27-31 N-D '63. (MIRA 17:2)

SHVARTS, G.L., kand. tekhn. nauk; SHEVELKIN, B.N., kand. tekhn. nauk;
TOROPOV, V.A., kand. tekhn. nauk

Titanium, a new material for chemical equipment. Zhur.
VKHO 8 no.3:317-328 '63. (MIRA 16:8)

GALITSKIY, B.A., inzh.; ABELEV, M.M.; KOLOSOVA, L.P.; TOROPOV, V.A.; SHEVELKIN, B.N.; DOMEE, Yu.I., inzh., retsenzent; SKVORTSOV, Ye.Ye., inzh., red.; TAIROVA, A.L., red. izd-va; EL'KIND, V.D., tekhn. red.; MAKAROVA, L.A., tekhn.red.

[Titanium and its alloys in the chemical machinery industry] Titan i ego splavy v khimicheskom mashinostroenii. [By] B.A. Galitskii i dr. Moskva, Mashgiz, 1963. 263 p. (MIRA 17:1)

ACCESSION NR: AP4013293 S/0135/64/000/002/0026/0027

AUTHORS: Toropov, V. A. (Candidate of technical sciences); Shevelkin, B. N. (Candidate of technical sciences); Samochatov, I. M. (Engineer); Gerasimenko, G. I. (Engineer)

TITLE: Technology of producing welded devices lined with thin corrosion resistant steel plates

SOURCE: Svarochnoye proizvodstvo, no. 2, 1964, 26-27

TOPIC TAGS: welding, stamping, lining, corrosion resistant steel, Kh18N9T steel, OKh18N10T steel, St3 steel, steel container

ABSTRACT: The article presents a description of the technological procedures used in preparing various parts of cylindrical welded devices for the chemical industry. These parts (up to 1 m in diameter) were lined with corrosion-resistant steel (Kh18N9T and OKh18N10T). In this type of devices the lining was not welded to the steel base; these parts cannot be used for procedures requiring vacuum. The technique used in producing them secured high corrosion stability of welded connections in the steel lining at its minimum thickness. An example of such a device is shown

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ACCESSION NR: AP4013293

in Fig. 1 on the Enclosure. Here the frame and the lid were made of steel St3 8-10 mm thick. The fettling material used consisted of two carbon steel sheets 8 mm thick and an interlayer of corrosion-resistant steel. The interlayer was either solid or consisted of two sheets welded together. The process of fabricating such devices produced a saving of 80 to 90% in steel. Orig. art. has: 1 table, 3 figures, and 4 formulas.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 26Feb64	ENCL: 01
SUB CODE: ML	NO REF SOV: 000	OTHER: 000

Card 2/3

ACCESSION NR: AR4027932 S/0137/64/000/002/2005/2005

SOURCE: RZh. Metallurgiya, Abs. 2E31

AUTHOR: Toropov, V. A.; Gerasimenko, G. I.

TITLE: Welding of nickel-molybdenum alloys

CITED SOURCE: Tr. vses. n.-i. i konstrukt. in-t khim. mashinostr. vy*p. 43, 1963, 77-83

TOPIC TAGS: nickel alloy welding, molybdenum alloy welding, argon arc welding

TRANSLATION: For welding cast Ni-Mo alloys N70M26L, N65M2OL, use of KhN-1 electrodes is recommended, which provide a deposited metal of the following chemical composition (in %): C $\leqslant$ 0.04, Si 0.15-0.35, Mn 0.2-0.7, S $\leqslant$ 0.025, P 0.025, Ni 64.0-68.0, Mo 27.0-30.0, bal. Fe. In the course of welding of N60M35L, large cracks are formed in the heat-affected zone. The mechanical properties of weld joints of N70M26L and N70M26L are, respectively, σ_b 59.9 kg/mm^2 and 65.4 kg/mm^2. The corrosion resistance of the weld metal is higher than that of the base metal. Also given is a technological process for the argon-arc welding of a sheet Ni-Mo alloy 2 mm thick. The joint made of NIMO-28 alloy has σ_b 78.9 kg/mm^2, and a bending

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ACCESSION NR: AR4027932

angle of 130°. Yu. Sokolov

DATE ACQ: 19Mar64 SUB CODE: ML ENCL: 00

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TOROPOV, V.A.

Welding of corrosion resistant metals and alloys in chemical machinery manufacture. Avtom. svar. 16 no.4:12-18 Ap '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorskiy institut khimicheskogo mashinostroyeniya.
(Chemical engineering—Equipment and supplies)
(Corrosion resistant materials—Welding)

L 10711-63 EWP(q)/EWT(m)/BDS--AFFTC/ASD--JD

ACCESSION NR: AP3001650 S/0063/63/008/003/0317/0328 54

AUTHOR: Shvarts, G. L. (Candidate of technical sciences); Shevelkin, B. N. (Candidate of technical sciences); Toropov, V. A. (Candidate of technical sciences)

TITLE: Titanium: a new material for chemical equipment

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo. Zhurnal, v. 8, no. 3, 1963, 317-328

TOPIC TAGS: titanium, corrosion-resistance, chemical equipment

ABSTRACT: Authors present a detailed description of titanium and its application as one of the materials used for chemical equipment. The article contains descriptions of titanium and its chemical compositions, its mechanical and physical properties being manufactured in the SSSR and abroad and its best application as chemical equipment in different branches of the chemical industry. Titanium and its alloys at normal temperatures possess sufficient strength but are slightly less plastic than corrosion-resistant steels. The plasticity of titanium depends on the amount of the admixtures and alloying elements, the increase of which increases the strength and lowers the plastic properties of titanium. The most widely used

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L 10711-63
ACCESSION NR: AP3001650

titanium in the SSSR for chemical machine construction is the commercially pure titanium VT1, titanium alloy OT4-1 and OT4. Despite the high engineering properties and corrosion resistance of titanium and prospects of application in the construction of chemical equipment, the practical application is limited because of its high price. The only possible application at a lower cost of high-corrosion resistant chemical equipment is titanium (coated) steel. Orig. art. has: 6 figures and 8 tables.

ASSOCIATION: none

SUBMITTED: 000

DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: 00

NO REF SOV: 007 OTHER: 012

bm/CR
Card 2/2

S/125/63/000/004/003/011
D040/D112

AUTHOR: Toropov, V.A.

TITLE: Welding corrosion-resistant metals and alloys in chemical machine building

PERIODICAL: Avtomaticheskaya svarka, no. 4, 1963, 12-18

TEXT: The present state and future prospects of welding in the Soviet chemical machine-building industry are reviewed. Brief mention is made of the welding methods and materials used in welding austenitic and austenitic and ferritic nichrome steels; combinations of corrosion-resistant and common carbon steel; aluminum, copper, nickel, and their alloys; commercial titanium, tantalum, columbium, and molybdenum; welding titanium sheet linings to carbon steel casings, and welding other bimetals; welding pipes and joining pipes to plates. The trade names of the recommended welding wires and fluxes are given. Electroslag welding of titanium in special machines developed by the Institut elektrosvarki im. Ye.O. Patona (Electric Welding Institute im. Ye.O. Paton) and electron-beam welding of molybdenum are among the used methods. Technological recommendations are

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included. NIIkhimmash now working on the welding of steel to copper, bronze, brass, nickel, titanium and silver, has also developed a new welding head for automatic argon arc butt welding of pipes which is described and shown in a photo. Its particular feature is argon feed by special sliding ducts which make it unnecessary to rotate the gas hose together with the welding head. There are 6 figures.

ASSOCIATION: NIIkhimmash

SUBMITTED: September 8, 1962

TOROPOV, V.A., kand.tekhn.nauk; GERASIMENKO, G.I., inzh.

Welding of cast nickel-molybdenum alloys. Khim.mash. no.2: 33-36 Mr '62. (MIRA 15:3)
(Nickel-molybdenum alloys--Welding)

TOROPOV, V.N., mekhanik

Reequipping generator gears with the SDU-2 aggregate. Stroi. truboprov. 8 no.11:28 '63 (MIRA 17:7)

1. Stroitel'nyy uchastok No.4 SU-3 tresta Nefteprovodmontazh, Novosibirsk.

MAMONOV, Ye.I.; TOROPOV, V.P.

Certain problems concerning the study of parametrons. Vych. tekh. no.4:27-38 '62. (MIRA 16:6)
(Electronic computers)

Some problems of ...

S/745/62/000/004/003/007
D201/D308

ВК-1 (VK-1). 2. The experiments, together with theoretical considerations of the frequency characteristics of parametrons, have shown that the above diodes and VK-1 capacitors are not suitable for common use on parametric devices because of the high cost of the diodes and of high d.c. and a.c. voltages required for their operation, the Seignette salt and ferrite elements having large hysteresis losses which limit the operating frequency. The most promising, from the point of view of speed and economy, are ferromagnetic and Seignette films, operating at pumping frequencies up to about 100 Mc/s. There are 12 figures.

Card 2/2

TOROPOV, V.S.; KOROL'KOV, N.V., kand. tekhn. nauk, otv.red.; ORLOVA, I.A., red.; KORKINA, A.I., tekhn.red.

[Use of an "Ideal" hysteresis loop of ferromagnetic materials in magnetic memory systems]Primenenie "ideal'noi" petli gisterezisa ferromagnetikov v magnitnykh zapominaiushchikh ustroistvakh. Moskva, Vychislitel'nyi tsentr AN SSSR, 1962. 32 p. (MIRA 15:9)

(Magnetic memory (Calculating machines))

TOROPOV, V.S.; KOROL'KOV, N.V., kand. tekhn. nauk, otv. red.; ORLOVA, I.A., red.; KORKINA, A.I., tekhn. red.

[Use of multiple-hole cores in operative memory devices] Ispol'zovanie mnogodyrochnykh serdechnikov v operativnykh zapominaiushchikh ustroistvakh. Moskva, VTs AN SSSR, 1963. 40 p. (MIRA 17:1)

(Cores (Electricity))
(Magnetic memory (Computers))

BR

ACCESSION NR: AT4035415 S/0000/63/000/000/0234/0239

AUTHOR: Toropov, V. S.; Zudilina, S. B.

TITLE: Investigation of ferrite magnetization reversal over a nonhysteresis curve

SOURCE: Vsesoyuznoye soveshchaniye po ferritam i po beskontaktny*m magnitny*m elementam avtomatiki. 3d, Minsk. Ferrity* i beskontaktny*ye elementy* (Ferrites and noncontact elements); doklady* soveshchaniya. Minsk, Izd-vo AN BSSR, 1963, 234-239

TOPIC TAGS: ferrite, ferrite magnetization, magnetization reversal, magnetization curve, ferrite core, core storage

ABSTRACT: In a study of ferrite magnetization reversal, the authors discuss ideal or nonhysteresis magnetization curves created by the superimposition of weak stable and strong variable damping fields. A 2 x 1.5 x 1 mm BT-1 core and a3 x 2 x 1 mm BT-5 core with coercive forces of 1.2 e and 0.3 e, respectively, and 3 coils were used in the experimental demonstration of the curves. Pulses were sent through 2 coils, as shown in the Enclosure, and the signal was read from the third. The coincident damping sine-shaped and steady-amplitude pulses magnetize the core in one direction while the other pulse of the opposite polarity reinstates it. To achieve complete magnetization reversal, the magnitude of the

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ACCESSION NR: AT4036415

two first damping half-periods must be sufficiently great and the period length $T > 2\tau_{per}$. This method of magnetization reversal may be useful in operative storage design and operation. Orig. art. has: 6 figures and 2 formulas.

ASSOCIATION: none

SUBMITTED: 04Dec63	DATE ACQ: 07May64	ENCL: 01
SUB CODE: DP	NO REF SOV: 001	OTHER: 000

Card 2/3

ACCESSION NR: AT4035415

ENCLOSURE: 01

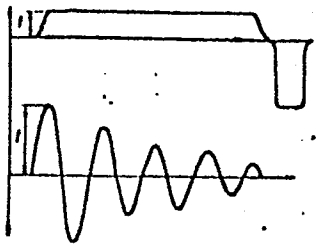

Fig. 1. Time course of pulse tracking

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TOROPOV, V.S. KOROL'KOV, N.V., kand.tekhn.nauk, otv.red.; ORLOVA, I.A., red.;

[Some problems in magnetic polarity reversal in ferrites in particular cycles of the hysteresis loop]. Nekotorye voprosy peremagnichivaniia ferritov po chastnym tskiklam petli gisterezisa. Moskva, 1964. 21 p. (Akademiia nauk SSSR. Vychislitel'nyi tsentr. Soobshcheniia po vychislitel'noi tekhnike, no. 3) (MIRA 17:6)

TOROPOV, V.S.; KOROL'KOV, N.V., kand. tekhn. nauk, otv. red.;
ORLOV, I.A., red.

[Operational magnetic memory unit with ferrite-diode control elements] Magnitnoe operativnoe zapominaiushchee ustroistvo s upravleniem na ferrit-diodnykh elementakh. Moskva, Vychislitel'nyi tsentr AN SSSR, 1965. 45 p. (MIRA 18:8)

L 01986-67 EWT(d)/EWP(1) IJP(c) BB/GG

ACC NR: AM6004717 Monograph UR/ 48 B+1

Toropov, V. S. 16

Magnetic operational memory unit with ferrite diode control elements (Magnitnoye operativnoye zapominayushchiye ustroystvo s upravleniyem na ferrit-diodnykh elementakh) Moscow, VTs AN SSSR, 1965. 45 p. illus. 3,150 copies printed.

TOPIC TAGS: storage unit, memory unit, matrix selection circuit, ferrite diode element, switching circuit, electronic digital computer, computer component

PURPOSE AND COVERAGE: This booklet is intended for scientists, engineers, and technicians concerned with the design, operation, and maintenance of digital computers. It may also be useful to advanced students in this field. In this booklet, the author wished to fill the existing gap in the development of reliable and inexpensive storage units using ferrite-diode elements in the control and amplification circuit. A successful solution to this problem would also make it possible to construct the storage unit from elements similar to those used in the other units of the computer without using tubes or transistors. N.V. Korol'kov supervised the theoretical and experimental work described in the book and G.A. Zavizion and S.B. Zudilina

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completed and adjusted the experimental storage unit model. There are no references.

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LOBOV, I.M., inzh.; SIDOROVA, R.M., inzh.; TOROPOV, Ye.V., inzh.; PEREPELKINA, L.I., tekhnik

Better heat conditions for blast furnace air preheater operations. Stal' 22 no.8:695-696 Ag '62. (MIRA 15:7)

1. Magnitogorskiy metallurgicheskiy kombinat.
(Air preheaters)

YAKHONTOV, M.V.; TOROPOV, Ye.V.; IVANOV, A.D.

Causes of the pulsation in blast furnace air preheaters. Stal' 23 no.9:778-781 S '63. (MIRA 16:10)

1. Magnitogorskiy metallurgicheskiy kombinat.

TOKOPOV, Ye.V.; IVANOV, A.D.

Ways of raising the temperature of the hot blast at the blast furnace department of the Magnitogorsk metallurgical combine. Stal' 25 no.5:401-403 My '65. (MIRA 18:6)

S/264/62/000/004/001/005
I006/I206

AUTHOR Toropov, Yu. A.

TITLE Table nomograph method for the calculation of air-liquid damping with adjustable through-passage

PERIODICAL Referativnyy zhurnal, vozdushnyy transport. Svodnyy tom. no. 4, 1962, 8, abstract 4 A43, (Tr. Kazansk. aviats. in-ta), no. 62, 1961, 151-170

TEXT: A method is proposed for the calculation of air-liquid damping of aircraft undercarriage, based on use of a special nomograph and tabulated data.

[Abstracter's note: Complete translation.]

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TOROPOV, Yu.A.

Table-nomograph calculation of oleo-pneumatic amortization with a regulated straightway hole. Trudy KAI no.62:151-170 '61. (MIRA 17:2)

TOROPOV, Yu.M.

Method of implanting electrodes in the area of the aortal arch for the purpose of stimulating its reflexogenic zones under chronic experimental conditions. Trudy mol. nauch. sotr. MONIKI no.1: 225-228 '59 (MIRA 16:11)

1. Iz pato-fiziologicheskoy laboratorii nauchno-eksperimental'nogo otdela (rukovoditel' doktor med. nauk O.I.Voronkova) Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta imeni Vladimirskogo.

TOROPOV, Yu.M.

Changes occurring in the myocardium of rabbits under the influence of repeated stimulations of the arch of the aorta in prolonged experiments. Nauch. soob. Inst. fiziol. AN SSSR no.1:141-143 '59. (MIRA 14:10)

1. Laboratoriya fiziologii krovoobrashcheniya i dykhaniya (zav. - Konradi, G.P.) Instituta fiziologii imeni Pavlova AN SSSR.
(HEART—MUSCLE) (AORTA)

TOROPOVA, V.F., NAYMUSHINA, K.V.

Polarographic study of complex compounds of cadmium with thiosemicarbazide and semicarbazide. Zhur. neorg. khim. 5 no.4:874-878 Ap '60. (MIRA 13:7)

1. Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova - Lenina.
(Cadmium compounds) (Semicarbazide)

TOROPOV, Ye. N.

TOROPOV, Ye. N. : "Groups with a given number of classes of noninvariant n-alpha-subgroups." Belorussian State U imen V. I. Lenin. Gomel', 1956 (Dissertation for the Degree of Candidate in Physicomathematical Science)

Source: Knizhnaya Letopis' No. 28 1956 Moscow

LOMAZOV, M.G., doktor med.nauk; TOROPOV, Yu.D. (Zaporozh'ye)

Goiter in Zaporozh'ye Province. Vrach.delo no.6:609-613 Je '59.
(MIRA 12:12)

1. Khirurgicheskoye otdeleniye Zaporozhskoy oblastnoy bol'nitsy.
2. Glavnyy khirurg Zaporozhskogo oblzdravotdela (for Lomazov).
(ZAPOROZH'YE PROVINCE--GOITER)

TOROPOVA, A.G.

Some features of the heat balance of a beet field. Trudy Sred.-Az. nauch.-issl. gidrometeor. inst. no.12:28-33 '62. (MIRA 16:5)
(Beets) (Plants, Effect of temperature on)

TOROPOVA, A.G.

Some microclimatic characteristics of sugar beet fields in the Chu Valley. Trudy Sred.-Az.nauch.-issl.gidrometeor.inst. no.2:197-205 '59. (MIRA 13:6)

(Microclimatology)
(Chu Valley--Sugar beets)

USSR/Farm Animals. Cattle 9-2

Abs Jour : Ref Zhur - Biol., No 19, 1958, No 88053

Author : Toropova G.A.
Inst : Moscow Agricultural Academy imeni K.A. Timiryazev
Title : Certain Indexes of Intermediate Metabolism in Dairy Cows

Orig Pub : Dokl. Mosk. s.-kh. akad. im. K.A. Timiryazeva, 1957, vyp. 30, ch. 2, 184-190

Abstract : The experiments were conducted on 11 cows of the black and white breed, fed and maintained under identical conditions. Blood was collected from the jugular vein once every month. The protein content in the blood serum amounted to 8.37 percent in summer and 7.99 percent in winter; globulin content, 3.51 and 3.32, correspondingly; reserve alkalinity of blood, 3.68 and 4.05 mgpercent, correspondingly; and catalase activity, 4.87 and 5.29, correspondingly. Albumins in the blood serum increased from the 1st to the 3rd months of lactation, and thereupon decreased. Reserve alkalinity consistently decreased in measure with the evolution of pregnancy,

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Abs Jour : Ref Zhur - Biol., No 19, 1958, No 88053

and amounted to 88.5 percent in the interlactation period. No definite laws governing the changes in the indexes of metabolism during the lactation period could be discovered.

LIVSHITS, G.L., kand.tekhn.nauk; TORPANOVA, G.A., kand.tekhn.nauk

Effect of niobium on the properties of structural steel. Sbor. trud. TSNIICHM no.17:99-102 '60. (MIRA 13:10)
(Steel, Structural)

TORPANOVA, G.A.; Prinimali uchastiye: BEYLINA, TS.O., inzh.; GUSEV, D.K., inzh.

Bessemer manganese steel with zirconium. Sbor.trud.TSNIICHM no.27:26-28 '62. (MIRA 15:8)

1. Gosudarstvennyy proyektno-konstruktorskiy i eksperimental'nyy institut ugol'nogo mashinostroyeniya.
(Manganese steel--Metallurgy)

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18.1150

S/770/62/000/000/003/003

AUTHOR: Torpanova, G. A.

TITLE: Zirconium in structural steels.

SOURCE: Primeneniye tsirkoniya i yego soyedineniy v promyshlennosti; (materialy soveshchaniya pri Gosplane, GNTK i Akademii nauk USSR, Kiyev, 1960g.) Kiyev, Izd-vo AN UkrSSR, 1962, 31-39.

TEXT: The paper reports an investigation by the TsNIICherMet (see "Association") of the effect of Zr on the properties of carbon steel and on steels alloyed with Cr, Mn, W, V, and Ti. The range of Zr contents, introduced in the form of metallic Zr, Al-Zr, and Si-Zr, is from 0.03 to 0.65%. The most desirable % Zr varies, depending on what is to be achieved thereby, but it should not>0.3%. Smelting was done in a HF furnace. The alloying metal or compound was added to the well deoxidized metal in the furnace or in the ladle. 70-80% of the metallic Zr introduced, or 50% of the Si-Zr, was lost in burning. Zr affects the properties of steel in various ways; it reduces the size of S inclusions, forms stable carbides and nitrides, improves the hardenability of the steel, improves its weldability, enhances the endurance limit, improves the fluidity of molten steel, and inhibits grain growth. The latter effect is evident in the microstructure: Whereas in 20Г (20G) steel, upon heating to 1,000°C and oil cooling, signs of overheating are evident, steel 20ГЦ (20GTs) after identical treatment remains fine-grained. Similar effects prevail in

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Zirconium in structural steels.

other steels (cited). The effect is enhanced further by alloying with Al, Ti, and Zr. Tests on 30ХГТ (30KhGT) and 30ХГТЦ (30KhTTs) steels, both in lab and in production smeltings, were performed by TsNIIChM jointly with the ZIL automotive plant. The effect of Zr on the hardenability (H) of C and more highly alloyed steels is shown in tabulated data. The gain in H is attributed to the entry of a small quantity of Zr into the solid solution, as proved by chemical analysis and by the fact that addition of Zr displaced the S-shaped isothermal-austenite-decomposition curves toward the right. The mechanical properties of a steel are improved by addition of Zr (example of a C steel described, endurance-limit data of 8 steels tabulated). Zr enhances the yield limit (specific cases cited). Zr-alloyed structural steel gains in scale resistance; at 820°C, weight loss after 10-hr soaking is reduced by 2/3. Zr alloying reduces corrosion losses somewhat (data for 4 steels tabulated). The favorable effect of Zr on the pourability of liquid steel was tested by casting spiral- and pan-shaped specimens. Example: A 350-mm long spiral and a 2-mm thick pan of 40 ХЦ (40KhTs) steel with Zr corresponded to a 200-mm long spiral and a 5-6-mm thick pan of 40Х (40Kh) steel without Zr. A full-page table shows the composition of new, Zr-alloyed, steels. In the automatic-machining steel А45Ц (A45Ts) the Zr was used to comminute the S inclusions; in the casting steels 30ГЦЛ (30GTsL) and 40ГЦЛ (40GTsL) the Zr served to improve pourability; in the CrZr steel 45ХЦ (45KhTs) Zr improved the hardenability; in the heat-resistant steel 28ХВФЦ (28KhVFTs), Zr enhanced the heat resistance; in steel 3, Zr

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improved the weldability and reduced the hot-cracking tendency during welding; in steel 30KhGTTs Zr inhibits the grain growth. Production testing has been completed for steels A45Ts, 30GTsL, and 40KhTsL; 45KhTs, 3Ts, 28KhVFTs; 30KhGTTs. Steel Mark A45 Ц (A45Ts): In this steel Zr has tendered practicable the old concept of adding S to a medium-carbon steel to improve its machinability. The ZrS_2 formed is not disposed along the grain boundaries of such a steel and thus improves its plasticity in forging and rolling. A tabulated comparison shows the improved machinability resulting from Zr-alloying of steel 45. Steel Marks 30ГЦЛ (30GTsL) and 40ХЦЛ (40KhTsL): The Zr-alloyed version of these steels produces denser, more fine-grain castings with greater strength. Constant strength can then be achieved by smaller wall thicknesses, hence afford a saving in metal. Steel Mark 45ХЦ (45KhTs): Lab and shop tests (data tabulated), followed by a two-year operational test period with gears and shafts of coal-mining machines, confirmed the ability of this Zr-alloyed steel to compete successfully with the CrNi steel 40XH (40KhN), at a saving of 1.5% Ni per ton of liquid steel. Steel 3 Ц (3Ts): The Zr improves weldability, decreasing the hot-cracking tendency, and enhances the notch toughness in the near-weld zone both at room T and at low T (down to -40 °C). Test data are tabulated. Steel Mark 28ХВ@Ц (28KhVFTs): This steel was tested industrially for 2 yrs and was then submitted for introduction at boiler plants to replace the Mo-containing steel 30XMA (30KhMA). Its hardenability, fatigue resistance (up to 500°C), hot-brittleness resistance, stress-rupture and creep

strength, and relaxation characteristics are better than those of the 30KhMA steel (data listed and tabulated). Its introduction would afford a significant economy in Mo, which is in short supply. Steel Mark 30ХГТЦ (30KhGTTs): The grain-growth threshold of the Zr version exceeds that of the Zr-less version 30KhG T by 50°C. The Zr-containing version manifests a greater hardenability ; its room-T tensile and impact characteristics are equal, but its fatigue endurance is considerably better. The microsctructure is finer. In case-hardened spur gears, its wear is lower. In this steel the Zr content affords possibilities for high-T treatments (forging, rol'ng, cementation) without overheating, which reduce the duration of such a proces.s by as much as 50%. At cutting speed of 40 m/min the Zr-containing 30KhGTTs equals the machinability of the 30KhGT steel, whereas at lower speeds the Zr-containing version evinces better machinability. Conclusions: Zr affects the properties of structural steel favorably. The following Zr steels are recommended for industrial use: (a) automatic-machining Zr steel A45Ц (A45Ts) in lieu of steel 40-45; (b) CrZr steel Mark 45ХЦ (45KhTs) which, in many instances, can replace steel Mark 40ХН (40KhN); (c) CrZr and MnZr steels Mark 30ГЦЛ (30GTsL) and 40-45ХЦЛ (40-45KhTsL); (d) CrW steel, alloyed with V and Zr, Mark 28ХВФЦ (28KhVFTs); (e) CrMn steel, alloyed with Ti and Zr, Mark 30ХГТЦ (30KhGTTs). There are 8 tables, no figures or references.

ASSOCIATION: TsNIIChM (Central Scientific Research Institute of Ferrous Metallurgy).

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TORPANOVA, G.A.

Bessemer manganese steel with zirconium.

Special Steels and Alloys (Spetsial'nyye stali i splavy), Collection of Studies, Issue 27, 240 pages, published by the State Scientific and Technical Publishing House for Ferrous and Non-Ferrous Metallurgy, Moscow, USSR, 1962.